APPENDIX B

DATA COLLECTION LISTINGS

CATEGORY C: Control Equipment

C1-000. Circuit Card Assembly

The following is a listing of the information to collect to aid in the development of reliability metrics for a Circuit Card Assembly:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C2-000. Computer

The following is a listing of the information to collect to aid in the development of reliability metrics for a Computer:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: PC Workstation or Control System Server
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C3-000. Control Center, Motor

The following is a listing of the information to collect to aid in the development of reliability metrics for a Motor Control Center:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: motor center / load center
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C4-000. Control Panel

The following is a listing of the information to collect to aid in the development of reliability metrics for a Control Panel:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Use: Generator, HVAC/Chillers/AHUs, Switchgear
- Is this control panel for critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Control Panel available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C5-000. Gauge

The following is a listing of the information to collect to aid in the development of reliability metrics for a Gauge:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Type: Fuel (Diesel, Gasoline, or Heating Oil?), Vacuum, Pressure (Hydraulic or Pneumatic?)
- Does this Gauge monitor a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Gauge available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device been replaced due to failure?

C6-000. Meter

The following is a listing of the information to collect to aid in the development of reliability metrics for a Meter:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Fuel, or Water
  Digital or Analog
- Does this Meter monitor a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Meter available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance or calibration is performed and at what interval?
- Has this device been replaced due to failure?

C7-000. Network Hub

The following is a listing of the information to collect to aid in the development of reliability metrics for a Network Hub:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Ethernet or Fiber Optic
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C8-000. Pressure Control Assembly

The following is a listing of the information to collect to aid in the development of reliability metrics for a Pressure Control Assembly:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Maximum Pressure (psi)
  - Accumulator Capacity (gal)
- Is this Pressure Control critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Pressure Control available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C9-000. Pressure Regulator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Pressure Regulator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C10-000. Programmable Logic Controller (PLC)

The following is a listing of the information to collect to aid in the development of reliability metrics for a Programmable Logic Controller (PLC):

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Specifications:
    - Number of Points
    - Number of Instructions
    - Scan Time
    - Data Memory
    - Program Memory
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C11-000. Remote Terminal Unit (RTU)

The following is a listing of the information to collect to aid in the development of reliability metrics for a Remote Terminal Unit (RTU):

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Specifications:
    - Master or Slave
    - Number of Serial Ports
    - Number of Analog I/O Points
    - Number of Digital I/O Points
    - Memory Size
    - Communication Criteria
        - Serial - RS-232 / 422 / 485
        - 4-20 mA
        - Ethernet
        - LCD Display
        - Programmable Logic Controller (PLC)
        - Radio
        - Telephone
        - Web Enabled
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C12-000. Control System

The following is a listing of the information to collect to aid in the development of reliability metrics for a Control System:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Number of Acquisition Points
- Architecture: Server based, PLC based, or PC based
- Conections: Fiber Optic or Copper
- A listing of the systems this Control system controls or monitors, identifying critical equipment
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C13-000. Sending Unit

The following is a listing of the information to collect to aid in the development of reliability metrics for a Sending Unit:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Use: Air Velocity, Pressure, or Temperature
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C14-000. Thermocouple

The following is a listing of the information to collect to aid in the development of reliability metrics for a Thermocouple:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C15-000. Thermostat

The following is a listing of the information to collect to aid in the development of reliability metrics for a Thermostat:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electronic, Millivolt, 24Vac
- Use: Heating or Heating & Cooling
- Is there a battery backup?
- Does this Thermostat control critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Thermostat available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C16-000. Transducer

The following is a listing of the information to collect to aid in the development of reliability metrics for a Transducer:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Flow, Temperature, Pressure, or Vacuum
- Ratings:
  - Maximum Operating Temperature (^{o}C or ^{o}F)
  - Maximum Operating Pressure (psi)
  - Maximum Operating Vacuum (mmHg)
  - Maximum Operating Flow (GPM)
  - Operating Voltage
    - AC (VAC)
    - DC (VDC)
  - Output Voltage
    - AC (VAC)
    - DC (VDC)
- Does this Transducer control critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Transducer available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

C17-000. Valve Operator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Valve Operator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Hydraulic, or Pneumatic
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

CATEGORY E: Electrical Power Generation and Distribution Equipment

E1-000. Arrestor, Lightning

The following is a listing of the information to collect to aid in the development of reliability metrics for a Lightning Arrestor:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Ratings:
  - Voltage
  - Discharge current
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E2-000. Battery

The following is a listing of the information to collect to aid in the development of reliability metrics for a Battery:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Date of Manufacture
- In Service Date
- Battery installed in equipment
- Parent system
- Type: Dry Cell (Lithium Ion, Nickel Metal Hydride, Nickel Cadmium); Wet Cell (lead acid, Valve Regulated Lead Acid); or Gel Cell
- Ratings:
  - Voltage
  - Ampere Hour
- Battery Purpose: Backup; Constant Power; Load
- Does the battery supply power to a critical function?
- Is there a charger in use? If so what is the manufacturer and what are the voltage and current ratings? Is the charger used for more than a single battery? If so, how many?
- What is the time to 80% discharge at operational load?
- Is there a spare on site for this device? If so, How Many?
- What periodic maintenance is performed and at what interval?
- Are records kept on maintenance and replacement? Are they written or computerized?
- Has this device or any components been replaced due to failure?
- At what interval is the battery replaced?

E3-000. Bus Duct, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for Bus Duct:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Length?
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E4-000. Cabinet Heater

The following is a listing of the information to collect to aid in the development of reliability metrics for a Forced Air Flow Cabinet Heater:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Steam, or Hot Water
- Electrical:
  - Supply Voltage
  - Current
  - Phase
  - Frequency
  - Watts
- Steam or Hot Water:
  - Connection sizes (in)
  - Pressures (psi)
  - Heat Capacity (BTU)
- Is this a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Cabinet Heater available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E5-000. Cable Connection

The following is a listing of the information to collect to aid in the development of reliability metrics for a Cable Connection:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Parent system
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E6-000. Cable, AC

The following is a listing of the information to collect to aid in the development of reliability metrics for AC Cable:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Ratings:
  - Current
  - Size (MCM)
  - Voltage
  - Operational Load %kVA (If Known)
- Is the conductor: Below Ground, Above Ground, In conduit, In tray, Insulated, Open wire
- Type of insulation?
- Length (feet)
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant loop available for this circuit?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E7-000. Cable, Aerial

The following is a listing of the information to collect to aid in the development of reliability metrics for Aerial Cable:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Ratings:
    - Current
    - Size (MCM)
    - Voltage
    - Operational Load %kVA (If Known)
- Type of Insulation
- Length (feet)
- What is the approximate time to replace this device?
- Is there a redundant loop available for this circuit?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E8-000. Cable, DC

The following is a listing of the information to collect to aid in the development of reliability metrics for DC Cable:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Ratings:
  - Current
  - Size (MCM)
  - Voltage
  - Operational Load %kVA (If Known)
- Is the conductor: Below Ground, Above Ground, In conduit, In tray, Insulated, Open wire
- Type of insulation?
- Length (feet)
- What is the approximate time to replace this device?
- Is there a redundant loop available for this circuit?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E9-000. Cable, Communication

The following is a listing of the information to collect to aid in the development of reliability metrics for Communication Cable:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Type: Serial or Ethernet
- Speed (Mbps)
- Construction (Cat 3, Cat 5, Cat 6, Coaxial, Fiber Optic, Twisted Pair)
- Is the conductor: Below Ground, Above Ground, In conduit, In tray, Insulated, Open wire
- Type of insulation
- Length (feet)
- What is the approximate time to replace this device?
- Is there a redundant loop available for this circuit?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E10-000. Capacitor/Capacitor Bank

The following is a listing of the information to collect to aid in the development of reliability metrics for a Capacitor/Capacitor Bank:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Parent system
- Ratings:
    - kVAR
        - Capacitive
        - Inductive
        - Resistive
    - Voltage
    - Frequency
- Cooling: Air, Forced Air, Water, Other – Coolant Name?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available for this capacitor?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E11-000. Charger, Battery

The following is a listing of the information to collect to aid in the development of reliability metrics for a Battery Charger:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Date of Manufacture
- In Service Date
- Serial Number
- Parent system
- Ratings:
  - Input Voltage
  - Output Voltage
  - Output Ampere
- Is this device critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E12-000. Circuit Breaker

The following is a listing of the information to collect to aid in the development of reliability metrics for a Circuit Breaker:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- In Service Date
- Parent system
- Type: Fixed, Metal Clad, Molded Case, Oil filled, SF6 Filled, Vacuum
- Is this circuit breaker normally open or normally closed?
- Ratings:
  - Voltage
  - Current
  - Number of Poles
  - Interrupting Capacity
  - Frame Size
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant circuit?
- Is critical equipment protected by this circuit breaker?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device been replaced?

E13-000. Distribution Panel

The following is a listing of the information to collect to aid in the development of reliability metrics for a Distribution Panel:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E14-000. Drive

The following is a listing of the information to collect to aid in the development of reliability metrics for a Drive:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: adjustable speed or variable frequency
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E15-000. Engine

The following is a listing of the information to collect to aid in the development of reliability metrics for an Engine:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Diesel or Gasoline
- Number of Cylinders: 4, 6, 8, 12
- Displacement: CI or CC
- Ratings:
  - Horsepower (hp)
  - Torque (ft-lb)
  - Weight (lb)
  - RPM
- Starter type: Electric, Compressed Air, Other
- Is this Engine a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Engine available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E16-000. Filter, Electrical

The following is a listing of the information to collect to aid in the development of reliability metrics for an Electrical Filter:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Use: Tempest, HEMP
- Ratings:
  - Voltage
  - Current
- Is this Filter connected to critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Filter available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E17-000. Fuse

The following is a listing of the information to collect to aid in the development of reliability metrics for a Fuse:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Type: Fast Acting, Slow-Blow, Time Delay
- Ratings:
  - Voltage
  - Interrupting Capacity
- Is critical equipment protected by this Fuse? If so, what critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Fuse available for this circuit?
- Are records kept on fuse replacement? Are they written or computerized?
- What replacement has been done and at what interval?

E18-000. Generator, Diesel Engine

The following is a listing of the information to collect to aid in the development of reliability metrics for a Diesel Engine Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Packaged or Unpackaged?
- Ratings:
    - Engine:
        - Number of Cylinders: 4, 6, 8, 12, 16
        - Displacement (CI or CC)
        - Horsepower (hp)
        - Torque (ft-lb)
        - Weight (lb)
        - RPM
        - Starter type: Electric, Compressed Air, Other
    - Generator:
        - kVA/kW
        - Voltage
        - Current
        - Frequency
        - Power Factor
        - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E19-000. Generator, Gas Turbine

The following is a listing of the information to collect to aid in the development of reliability metrics for a Gas Turbine Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Packaged or Unpackaged?
- Ratings:
    - Engine:
        - Horsepower (hp)
        - Torque (ft-lb)
        - Weight (lb)
    - Turbine Shaft RPM
    - Generator:
        - kVA/kW
        - Voltage
        - Current
        - Frequency
        - Power Factor
        - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E20-000. Generator, Hydro Turbine

The following is a listing of the information to collect to aid in the development of reliability metrics for Hydro Turbine Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Packaged or Unpackaged?
- Ratings:
    - Horsepower (hp)
    - Torque (ft-lb)
    - Weight (lb)
    - Turbine Shaft RPM
    - Generator:
        - kVA/kW
        - Voltage
        - Current
        - Frequency
        - Power Factor
        - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E21-000. Generator, Natural Gas

The following is a listing of the information to collect to aid in the development of reliability metrics for a Natural Gas Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Packaged or Unpackaged?
- Ratings:
    - Engine:
        - Number of Cylinders: 4, 6, 8, 12, 16
        - Displacement (CI or CC)
        - Horsepower (hp)
        - Torque (ft-lb)
        - Weight (lb)
        - Starter type: Electric, Compressed Air, Other
    - Turbine Shaft RPM
    - Generator:
        - kVA/kW
        - Voltage
        - Current
        - Frequency
        - Power Factor
        - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E22-000. Generator, Steam Turbine

The following is a listing of the information to collect to aid in the development of reliability metrics for a Steam Turbine Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Packaged or Unpackaged?
- Ratings:
    - Engine:
        - Horsepower (hp)
        - Torque (ft-lb)
        - Weight (lb)
    - Turbine Shaft RPM
    - Generator:
        - kVA/kW
        - Voltage
        - Current
        - Frequency
        - Power Factor
        - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E23-000. Generator, Steam, Heat Recovery

The following is a listing of the information to collect to aid in the development of reliability metrics for a Heat Recovery Steam Generator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Assembly Manufacturer
- Assembly Model
- Assembly Serial Number
- Assembly In Service Date
- Engine Manufacturer
- Engine Model
- Engine Serial Number
- Engine In Service Date
- Generator Manufacturer
- Generator Model
- Generator Serial Number
- Generator In Service Date
- Purpose: Primary Power or Standby Power?
- Ratings:
    - Horsepower (hp)
    - Torque (ft-lb)
    - Weight (lb)
    - Turbine Shaft RPM
  - Generator:
    - kVA/kW
    - Voltage
    - Current
    - Frequency
    - Power Factor
    - Phase
- Is this Generator a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant generator available?
- Is the redundant Generator brought on line automatically?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E24-000. Heater

The following is a listing of the information to collect to aid in the development of reliability metrics for a Heater:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: lube oil, fuel oil, or jacket water
- Rating:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E25-000. Inverter, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for an Inverter:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Purpose: Primary Power or Standby Power
- Ratings:
    - Input Voltage
    - Input Current
    - Output Voltage
    - Output Current
    - kW Output
    - Frequency
    - Waveform
    - Output Overload Protection
    - Output Power Factor
    - Pulse Rating
    - Response Time
    - Battery Protection Levels
- Does this Inverter supply a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Inverter available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E26-000. Line Conditioner, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for a Line Conditioner:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Voltage
  - Current
  - Power (kW)
  - kVA
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E27-000. Motor Generator Set

The following is a listing of the information to collect to aid in the development of reliability metrics for a Motor Generator Set:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
    - Input Voltage
    - Input Current
    - Input Frequency
    - Input Phase
    - Output Voltage
    - Output Current
    - Output Frequency
    - Output Phase
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E28-000. Motor Starter

The following is a listing of the information to collect to aid in the development of reliability metrics for a Motor Starter:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E29-000. Motor, Electric

The following is a listing of the information to collect to aid in the development of reliability metrics for an Electric Motor:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
    - Horsepower
    - Torque (ft-lbs)
    - Speed (RPM)
    - Voltage
    - Phase
    - Current (Amps)
    - Motor NEMA Frame
- Is this Motor critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Motor available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E30-000. Oil Cooler

The following is a listing of the information to collect to aid in the development of reliability metrics for an Oil Cooler:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E31-000. Recloser (Interrupter)

The following is a listing of the information to collect to aid in the development of reliability metrics for a Recloser (Interrupter):

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electronic or Hydraulic
- Ratings:
  - Voltage
  - Current
  - Number of Operations before Lockout
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E32-000. Rectifier, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for a Rectifier:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Ratings:
    - Input Voltage
    - Input Current
    - Output Voltage
    - Output Current
    - Peak voltage
    - Average forward current
    - Peak surge current
    - Peak forward current
    - Temperature range
- Does this Rectifier supply a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Rectifier available?
- Is the redundant rectifier automatically switched in line?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E33-000. Relay

The following is a listing of the information to collect to aid in the development of reliability metrics for a Relay:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Class: General Purpose, Latching, Impulse, Stepping
  Sequence or Differential
- Type: Armature, Hybrid, Solid State, Time Delay, Differential Voltage, Drawout, Overcurrent
- Contact type: Normally Open, Normally Closed
  Complex: Number of Poles
- Ratings:
  Contacts: Voltage, Current
  Coil: Voltage, Resistance
  Frequency (Hz)
- Use:
  Low Level (low current switching, milliamp)
  Intermediate Level (up to 10 Amps)
  Protective Relay
  Special Purpose
- Does this Relay control a critical device? If so what?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Relay available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E34-000. Switch

The following is a listing of the information to collect to aid in the development of reliability metrics for a Switch:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: AC, DC, Automatic Transfer, Manual Transfer, Disconnect – Enclosed, Disconnect – fused, On/Off Breaker Type (non-knife), Float, Oil Filled, Pressure, Vibration, Static, IGBT Technology
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E35-000. Switchboxes Panels

The following is a listing of the information to collect to aid in the development of reliability metrics for Switchboxes Panels:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Type:
  - Disconnect or Transfer?
  - Knife or Circuit Breaker?
  - Manual or Automatic?
- Ratings:
  - Voltage
  - Current
  - Phase
- Does this Switchbox/Panel control critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Switchbox/Panel available?
- Does the Switchbox/Panel provide lock out provisions?
- Does the Switchbox/Panel provide circuit protection?
- Fuse, Circuit Breaker, or Solid State?
- Number of circuits?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E36-000. Switchgear

The following is a listing of the information to collect to aid in the development of reliability metrics for Switchgear:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Bare bus or insulated bus
- Number of Cabinets
- Ratings:
  - Voltage
  - Current
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E37-000. Tank

The following is a listing of the information to collect to aid in the development of reliability metrics for a Tank:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Capacity (gal)
- Construction Material
- Type:
  - Fuel: Diesel, Gasoline, Heating Oil, LP, Natural Gas
  - Receiver: Air or Refrigerant - Type: R12, R134A, R22, Other
    - Pressure Rating (psig)
  - Water: Boiler feed, Condensate, Expansion, Water treatment
  - Day: Approximate Running Time (hrs)
- Is there a redundant Tank available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E38-000. Transformer

The following is a listing of the information to collect to aid in the development of reliability metrics for a Transformer:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Dry or Liquid
  Step up, Step Down, Isolation, or Auto
- Forced Air Flow?
  Number of Fans
- Ratings:
  kVA
  Primary Voltage
  Primary Current
  Secondary Voltage
  Secondary Current
- Number of Taps
- Is this Transformer a critical device?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Transformer available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device been replaced due to failure?

E39-000. UPS: Uninterruptible Power Supply

The following is a listing of the information to collect to aid in the development of reliability metrics for an Uninterruptible Power Supply:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- Manufacturer Date
- In Service Date
- Parent system
- Ratings:
    - kVA
    - Power (kW)
    - Input Voltage
    - Output Voltage
    - Ride Through
- Static Switch type
- What type of equipment is connected to this UPS? Identify critical equipment.
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant UPS available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

E40-000. Voltage Regulator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Voltage Regulator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- In Service Date
- Parent system
- Ratings:
  - Input Voltage
  - Input Current
  - Output Voltage
  - Output Current
- Does this Voltage Regulator control critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Voltage Regulator available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

CATEGORY H: HVAC Equipment

H1-000. Accumulator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Accumulator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Capacity (gal or liter)
- Is the Accumulator pressurized? If so, what is the maximum pressure (psi)?
- Is this accumulator critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Accumulator available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H2-000. Air Compressor

The following is a listing of the information to collect to aid in the development of reliability metrics for an Air Compressor:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric or Fuel
- Ratings:
  Pressure (psig)
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H3-000. Air Conditioner

The following is a listing of the information to collect to aid in the development of reliability metrics for an Air Conditioner:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Compressor Type: (Reciprocating or Screw)
- Refrigerant Type: R-12, R-134A, R-22, Other
- Ratings:
  - Cooling Capacity (BTU/hr)
  - Voltage
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H4-000. Air Dryer, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for an Air Dryer:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent System
- Location
- Types:
  - Refrigerant
  - Desiccant
  - Membrane
  - In-line
- Maximum Pressure
- Pipe Size
- Is this Air Dryer critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Air Dryer available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H5-000. Air Handling Unit

The following is a listing of the information to collect to aid in the development of reliability metrics for a Air Handling Unit:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Nominal cooling capacity (tons)
- Nominal heating capacity (BTU)
- Nominal air volume (CFM)
- Supply Power:
  - Voltage
  - Phase
  - Frequency
- Humidity Control: None, Pan, Spray
- Is there an air filter?
- Evaporator Type
- Coil:
  - Face Area
  - Rows/fins
  - Operating charge (kg)
  - Chilled water or Refrigerant: R12, R134A, R22
- Fan:
  - Diameter (in)
  - Air volume (CFM)
  - Motor HP
  - Motor RPM
- Is this Air Handling Unit critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Air Handling Unit available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H6-000. Air Separator, All Types

The following is a listing of the information to collect to aid in the development of reliability metrics for an Air Separator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Types:
    - Screener - Drum / Rotary Sifter
    - Screener - Rectangular Deck
    - Screener - Round Deck
    - Air Classifier / Cyclone
    - Magnetic Separator
    - Trommel / Sorter
    - Water / Hydraulic Classifier
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H7-000. Blower

The following is a listing of the information to collect to aid in the development of reliability metrics for a Blower:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
    - Capacity (CFM)
    - Maximum RPM
    - Voltage
    - Current
- Is this Blower critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Blower available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H8-000. Boiler

The following is a listing of the information to collect to aid in the development of reliability metrics for a Boiler:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Type: Hot Water, Low Pressure Steam, or High Pressure Steam
- Fuel: Natural Gas, LP Gas, Oil, Diesel, Other
- Ratings:
  - Heating Size (BTU)
  - Capacity (gal)
  - Pressure (psi)
  - Efficiency (%)
- Pilot light or Electronic Igniter
- Does the system contain zones? If so, how many?
- Does the system contain a pump? If so, how many?
- Zone valve:
  - Manufacturer
  - Model
- Pump:
  - Manufacturer
  - Model
- Expansion Tank:
  - Manufacturer
  - Model
- Does the system contain a pressure safety valve?
- Is this a critical HVAC system?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Boiler available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H9-000. Cabinet Heater/Radiator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Cabinet Heater/Radiator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Steam, or Hot Water
- Electrical:
  - Supply Voltage
  - Current
  - Phase
  - Frequency
  - Watts
- Steam or Hot Water:
  - Connection sizes (in)
  - Pressures (psi)
  - Heat Capacity (BTU)
- Is this a critical HVAC system?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Cabinet Heater available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H10-000. Chiller

The following is a listing of the information to collect to aid in the development of reliability metrics for a Chiller:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Capacity (Tons, kW, Kcal/hr)
- Number of compressors
- Compressor motor:
  - Manufacturer
  - Model
  - Horsepower
  - Voltage
  - Motor frame number
- Water flow rate (gpm or Lps)
- Refrigerant Type: R12, R134a, R22, Other
- Refrigerant charge (kg)
- Type: Absorption, Centrifugal, Reciprocating, Rotary, Screw
- Is this a critical HVAC system?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Chiller available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H11-000. Compressor, Refrigerant

The following is a listing of the information to collect to aid in the development of reliability metrics for a Refrigerant Compressor:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Gasoline, or Diesel
  Reciprocating, centrifugal, screw
- Ratings:
  Motor/Engine Horsepower
  Motor Voltage
  Motor Current (Amps)
  Motor Phase
  Motor Speed (RPM)
  CFM output
  Maximum Rated Pressure (psi)
  Receiver Capacity (gal)
  Refrigerant volume (cc, L, pt, or qt)
  Refrigerant Type: R12, R134a, R22, Other
- Is this Compressor critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Compressor available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H12-000. Condenser

The following is a listing of the information to collect to aid in the development of reliability metrics for a Condenser:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Double Tube, Propeller type fans with coils, or Shell and Tube (refrigerant/water or water/water)
- Ratings:
  - Capacity (kW)
  - Fan Diameter (in)
  - Fan Motor Horsepower
  - Fan Motor Speed (RPM)
  - Fan Motor Voltage
  - Fan Motor Phase
  - Fan Motor Current (Amps)
  - Flow Rate (CFM)
  - Refrigerant Volume (cc, L, pt, or qt)
  - Refrigerant Type: R12, R134a, R22, Other
- Is this Condenser critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Condenser available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H13-000. Convector

The following is a listing of the information to collect to aid in the development of reliability metrics for a Convector:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Steam, or Hot Water
- Ratings:
  - Heat output (BTU or kW)
  - Voltage
  - Phase
  - Current (Amps)
  - Pressure, maximum (psi)
- Is this Convector critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Convector available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device been replaced due to failure?

H14-000. Cooling Tower

The following is a listing of the information to collect to aid in the development of reliability metrics for a Cooling Tower:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Type: Atmospheric or Evaporative
- Number of Fans
- Number of Cells
- Ratings:
  - Flow Rate (gpm)
  - Capacity
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H15-000. Damper Assembly

The following is a listing of the information to collect to aid in the development of reliability metrics for a Damper Assembly:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric or Pneumatic
- Ratings:
    - Temperature Range (^{o}C or ^{o}F)
    - Duct Size (ft^2)
    - Voltage
    - Phase
    - Current
    - Motor NEMA Frame
    - Pressure, Operating (in Hg)
    - Pressure, Maximum (in Hg)
    - Operational Load %kVA (If Known)
- Is this Damper critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Damper available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device been replaced due to failure?

H16-000. Dehumidifier

The following is a listing of the information to collect to aid in the development of reliability metrics for a Dehumidifier:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Dehumidification rate
  - Capacity
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H17-000. Direct Fired Furnace

The following is a listing of the information to collect to aid in the development of reliability metrics for a Direct Fired Furnace:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Fuel: Natural Gas, LP Gas, Oil, Other
- Ratings:
  - Heat Output (BTU/hr)
  - Voltage
  - Phase
  - Current
  - Motor NEMA Frame
- Is this Direct Fired Furnace critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Direct Fired Furnace available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H18-000. Evaporator

The following is a listing of the information to collect to aid in the development of reliability metrics for a Evaporator:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Air or Liquid
- Design: Coil or Shell and Tube
- Ratings:
  - Heat Transfer Rate (BTU/hr)
  - Voltage
  - Phase
  - Current (Amps)
  - Motor NEMA Frame
  - Liquid type
  - Liquid Capacity
  - Refrigerant type: R12, R134a, R22, water, Other
- Is this Evaporator unit critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Evaporator available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H19-000. Fan

The following is a listing of the information to collect to aid in the development of reliability metrics for a Fan:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Centrifugal, Propeller/disc, Tube-axial, or Vane-axial
- Ratings:
    - Size (in)
    - Output (CFM)
    - Number of Blades
    - Motor Horsepower
    - Motor Speed
    - Voltage
    - Phase
    - Current
    - Motor NEMA Frame
- Is this Fan critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Fan available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H20-000. Filter, Mechanical

The following is a listing of the information to collect to aid in the development of reliability metrics for a Mechanical Filter:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Use: Air, Lube oil, Fuel oil, or Gasoline
- Ratings:
  - Inlet Size (ID ,in^2 or ft^2)
  - Outlet Size (ID ,in^2 or ft^2)
  - Inlet Pressure, Max (psi)
  - Outlet Pressure, Max (psi)
  - Flow Rate (gpm or CFM)
  - Temperature, Maximum (^oC or ^oF)
  - Filter Element
- Is this Filter connected to critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Filter available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H21-000. Heat Exchanger

The following is a listing of the information to collect to aid in the development of reliability metrics for a Heat Exchanger:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent System
- Type: Steam, Water to Water, Lube Oil, Radiator (Small Tube)
- Ratings:
  - Heat Transfer Rate (BTU/hr)
  - Efficiency (%)
- Is this Heat Exchanger critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Heat Exchanger available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H22-000. Heat Pump

The following is a listing of the information to collect to aid in the development of reliability metrics for a Heat Pump:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Capacity (Tons)
  - Output (BTU/hr)
  - Voltage
  - Current
- Compressor Type: Reciprocating or screw
- Refrigerant Type: R12, R-134a, R-22, Other
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H23-000. Humidifier

The following is a listing of the information to collect to aid in the development of reliability metrics for a Humidifier:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Capacity
- Type: Liquid to Steam or Steam to Steam
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H24-000. Humistat Assembly

The following is a listing of the information to collect to aid in the development of reliability metrics for a Humistat Assembly:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Voltage
  - Current
  - Control Signal
  - Analog Voltage
  - Digital Level
- Is this Humistat critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Humistat available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H25-000. Pipe

The following is a listing of the information to collect to aid in the development of reliability metrics for a Pipe:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- In Service Date
- Parent system
- Size OD (in)
- Size ID (in)
- Length (feet)
- Material/Specification
- Coupling Type:
  - Compression
  - Solder
  - Threaded
- Medium Carried
  - Domestic Hot Water
  - Domestic Cold Water
  - Sanitary Water
  - Coolant
  - Chiller Water
  - Steam
- Is this Pipe critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Pipe loop available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H26-000. Pump

The following is a listing of the information to collect to aid in the development of reliability metrics for a Pump:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Centrifugal or Positive Displacement
- Ratings:
    - Flow Rate (GPM)
    - Maximum Pressure (psi)
    - Maximum Operating Temperature (^{o}C or ^{o}F)
    - Motor Horsepower
    - Motor Torque (ft-lbs)
    - Motor Speed (RPM)
    - Motor Voltage
    - Motor Phase
    - Motor Current (Amps)
    - Motor NEMA Frame
- Is this Pump critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Pump available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H27-000. Strainer

The following is a listing of the information to collect to aid in the development of reliability metrics for a Strainer:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Ratings:
  - Inlet Size (in)
  - Outlet Size (in)
  - Maximum inlet pressure (psi)
  - Maximum operating temperature (^{o}C or ^{o}F)
- Fluid
  - Coolant
  - Fuel Oil
  - Lube Oil
  - Water
  - Air or Gaseous
- Is this Strainer critical equipment?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Strainer available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H28-000. Valve

The following is a listing of the information to collect to aid in the development of reliability metrics for a Valve:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Diverting, Mixing Ball, Butterfly Check, Control, Expansion, Gate, Globe, Plug, Relief, or Suction?
- Position: Normally Open or Normally Closed
- Control: Manual, Electrical, Pneumatic
- Construction Material
- Ratings:
  - Voltage
  - Current
  - Max Operating Temperature (^{o}C or ^{o}F)
  - Max Operating Pressure (psi)
- Size:
  - Inlet Size OD (in)
  - Outlet Size OD (in)
- Is this Valve in a critical system?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant Valve available in the system?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H29-000. Water Cooling Coil

The following is a listing of the information to collect to aid in the development of reliability metrics for a Water Cooling Coil:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?

H30-000. Water Heater

The following is a listing of the information to collect to aid in the development of reliability metrics for a Water Heater:

- Today's Date
- Facility Name/ID
- Equipment Facility ID/Name
- Manufacturer
- Model
- Serial Number
- In Service Date
- Parent system
- Type: Electric, Fuel, Gas
- Size
- Is this device critical?
- Is there a spare on site for this device? If so, How Many?
- What is the approximate time to replace this device?
- Is there a redundant device available?
- Are records kept on maintenance and replacement? Are they written or computerized?
- What periodic maintenance is performed and at what interval?
- Has this device or any components been replaced due to failure?